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ABSTRACT

Designed to develop creativity in young learners, this book contains interdisciplinary activities which focus on the theme of animals. Activity pages are provided that can serve as front and back covers of a student booklet and the suggested activities can be duplicated for insertion between the covers resulting in a booklet for each student. A teacher/parent guide is included and supplies background information, activity descriptions, materials needed, and possible answers for the activities. A variety of exercises are provided which focus on such topics as: (1) microscopic life; (2) metamorphosis; (3) animal tracks; (4) birds; (5) fish; (6) vertebrates; (7) animal records; and (8) the human skeleton. (ML)

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YOUNG SCIENTISTS EXPLORE

BOOK 2 INTERMEDIATE LEVEL

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SE 047 866

Young Scientists Explore
ANIMALS
Book 2 - Intermediate Level
By **JERRY DEBRUIN**

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PREFACE

A NOTE TO TEACHERS AND PARENTS

Dear Friends,

Thank you for the many kind comments about my previous book, *Creative, Hands-on Science Experiences* (CHOSE) published by Good Apple, Inc., in 1980.

This book, *Young Scientists Explore Animals*, is written as a result of your comments and suggestions, comments that suggested a need for a handy science book or series of books that contain activity pages which could be duplicated for students' use. *Young Scientists Explore Animals* is an attempt to meet this need.

Young Scientists Explore Animals is the second in a series of books that feature science activity sheets which provide youngsters with a variety of interesting and challenging science-related experiences using puzzles, cutouts, hidden pictures, grids, charts, and seek-a-words. Youngsters are encouraged to gain firsthand experience before doing the written activities, for it is through firsthand experience that meaningful learning occurs. Emphasis throughout the book is placed on the development of creativity in the learner. It is hoped that this creativity will be nurtured both during and after the activities are done.

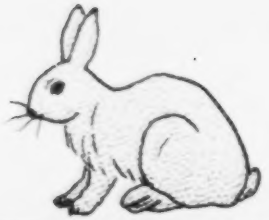
You as teachers and parents who use *Young Scientists Explore Animals* are encouraged to make duplicating masters and transparencies from its pages. The activities are interdisciplinary in nature and are meant to integrate and extend existing science instruction with other academic areas. To achieve this purpose, the book contains a Teacher/Parent Guide that supplies background information, including the title, the major concept and materials needed for each activity, plus a brief description of how to teach the activity and possible answers. When completed and mounted on single-layered cardboard and bound with tape, activity pages 1 and 24 make up both the front and back covers of the Student Booklet. Completed student activity pages can then be inserted between these covers with the result being a permanent Animal Booklet for each youngster.

It is hoped that these activity pages will touch many minds, hearts, and hands and that much personal growth is experienced by all who do the activities. Keep in touch. Let me know how you are doing. It is always good to hear from you. Until then, best wishes in your continued growth as a scientist and complete human being.

Sincerely,

Jerry DeBruin

MY ANIMAL

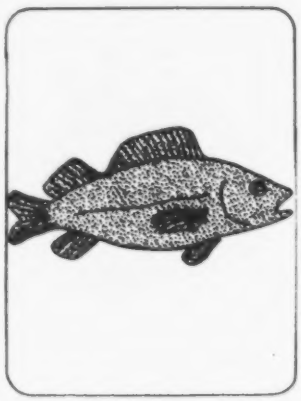


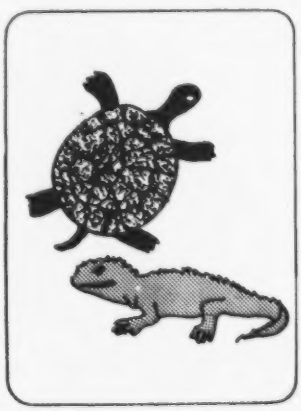
BUMPER STICKER

My
ANIMA
BOOK
name
my

ANIMAL KINGDOM

Scientists often use the words "Kings Play Cards on Fairly Good Soft Velvet" to remember how animals are grouped in the Animal Kingdom. These words stand for Kingdom, Phylum, Class, Order, Family, Genus, Species and Variety. Each group is smaller than the previous one. Cut out the animal cards below and glue them to the corresponding animal class card on page three. Identify both the animal itself and the group that it represents. Do a study of other groups of animals found in the Animal Kingdom. Identify and classify these animals according to group.

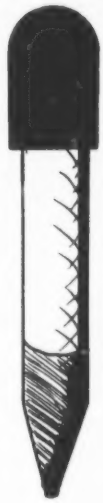


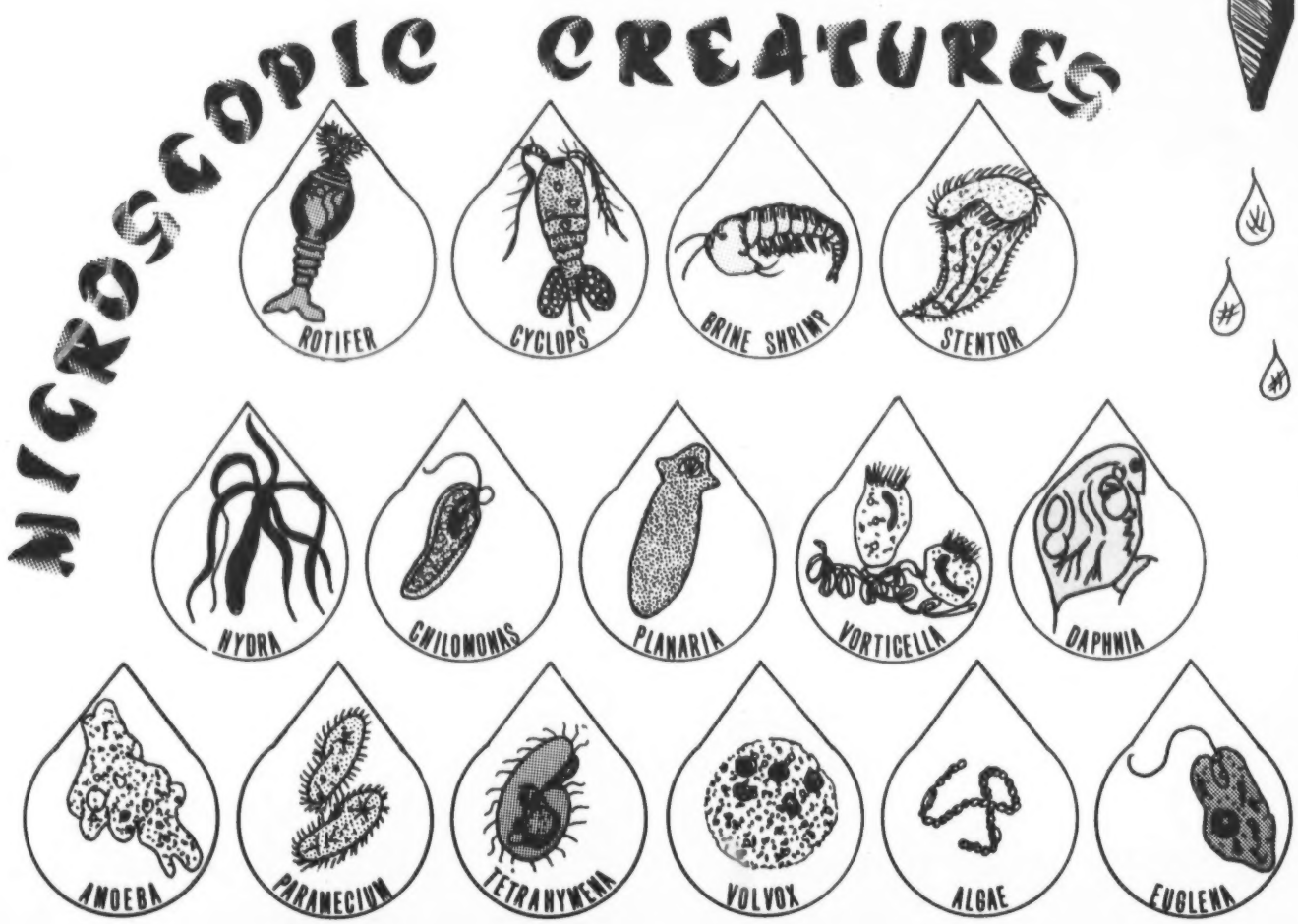


Animal
Kingdom
MAMMALIA
AVES
REPTILIA
PISCES
INSECTA
AMPHIBIA

Place the name of the small creature found below in the blank at the left of the statement that best describes that creature. Can you identify other microscopic animal creatures and add their names to the list?

1. _____ I move slowly and look like a dab of jelly under a microscope. I have false feet or pods.
2. _____ I am a slipper-shaped animal with many hairy feet that help me swim.
3. _____ I am used in studies on nutrition because I can live in a liquid that is bacteria free.
4. _____ I am often considered to be half plant and half animal, and I puzzle scientists because of this feature in me.
5. _____ I am a plant having chlorophyll. Some people call me seaweed.
6. _____ I move by lashing my whip-like tail like a bullwhip.
7. _____ I am a freshwater relative of jellyfish and can regrow new legs and arms.
8. _____ I am a small animal with a lot of lip.
9. _____ I am a flatworm and live in pond weeds and under the surfaces of dead leaves.
10. _____ I look like an upside-down bell with a tail. I was discovered over 300 years ago by Leeuwenhoek.
11. _____ I am a common water flea and have as many as seventeen instars or periods between molting.
12. _____ I have hair-like lobes that look like wheels on top of my head. I am often used to study life cycles and aging.
13. _____ I am an animal named after a lawless giant having one circular eye in the middle of the forehead.
14. _____ I am often called a "fairy shrimp" and have large dark eyes and numerous legs. I like it in darkness.
15. _____ I create waves as I just beat around my round self.

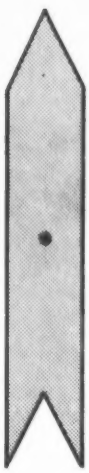


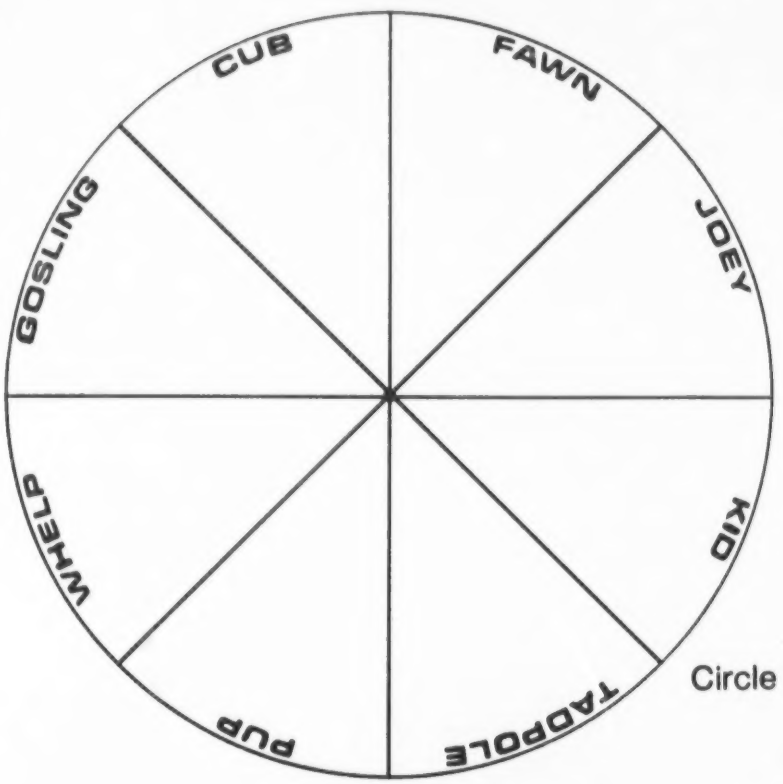


Cut out circles A, B and the pointer below. Mount on single-layered cardboard. Punch holes in centers of circles A and B and pointer. Place pointer on top of circle A and circle A on B. Attach at centers with paper fastener. Spin pointer. Name the adult animal. Then, rotate circle B until the name of offspring on edge of circle B matches adult animal on circle A. Make other animal wheels. Spin and match adult to appropriate offspring.

ANIMAL SPIN AND MATCH

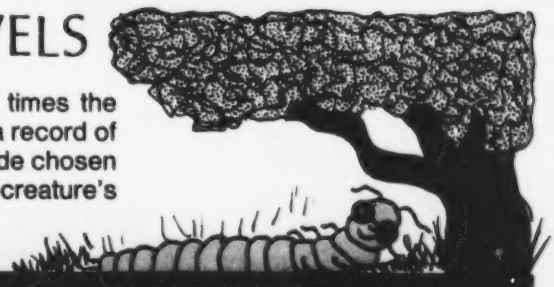
Circle A



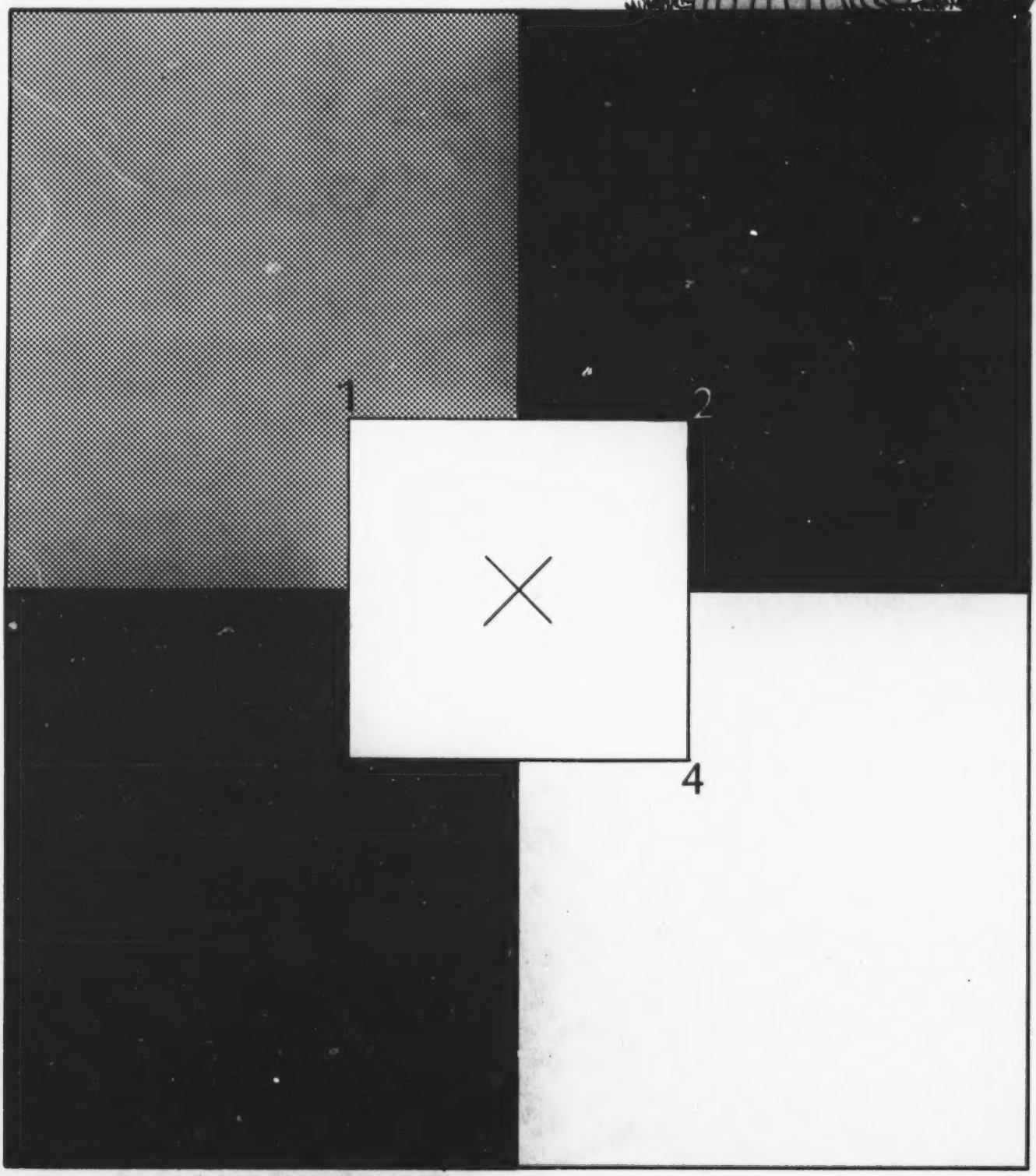


Circle B

SHADY TRAVELS



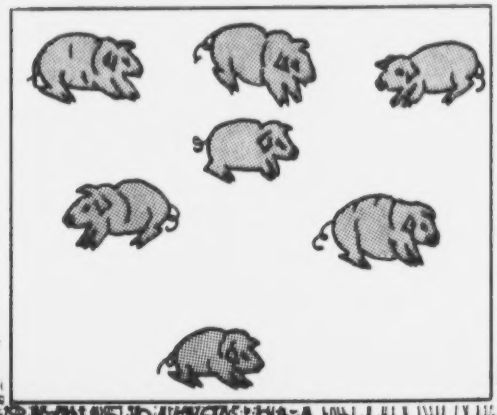
Place mealworm or sow bug on the "X." Count the number of times the creature travels to shady squares 1,2,3, or 4 in fifty trials. Keep a record of your results. Note both the number of travels and the types of shade chosen by your creature. Make a graph of your results. What is your creature's favorite shade? How is it different from the shade you prefer?



ANIMAL TOGETHERNESS

Read the story. Place the correct letters in the blanks that best describe how animals group together. Then write your own animal story on how animals need each other to survive.

Once upon a time a curious bear wandered through a forest. He felt very lonely, especially when he saw how many other animals were already members of groups. He watched *ants* in a c_____ living together and going about their busy work, *bees* in a s____ or h___ collecting pollen and *gnats* in a h____ buzzing about his face. He noticed how *gorillas* traveled in a b___, *vipers* sissed in a n___ and *quail* ruffled their feathers when in a b___. Peering from the forest, the bear observed a cool stream with a s_____ of *fish* and a b__ of *clams.* A s____ of *cranes* stood nearby. The bear observed how the stream of water ran close to a nearby farm. He listened quietly to a g_____ or f____ of *geese* overhead. The farm had *cattle* living together in a d____, *mules* in a s___, a y___ of *oxen* and a p___of *horses*. A l_____ of *pigs* snuggled next to their mother and a b____ of *chicks* cheeped for their food. A k_____ of *kittens* lay in the sunlight and a p___ of *hounds* sprinted across a field in search of food. Feeling lonely, the bear returned to his lair in the forest only to be greeted by two bear cubs who made him very happy, at least for awhile. But the bear soon realized that he, like other animals, needed time to be alone. Using three straight lines, can you help the bear place each pig in a separate pen below, so he can spend some time alone?

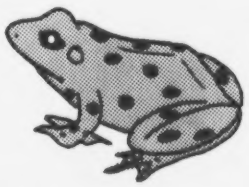


ANIMAL METAMORPHOSIS

Animals go through stages as they grow from babies into adults. When put together, these stages make up a life cycle. Cut apart the twelve cards on this page. For durability, glue each card to a similar-sized piece of cardboard. Then, arrange cards in correct order to show the stages in the life cycle of a mealworm, frog and butterfly. The letters are not a clue to the correct order. Write the name of the stage on each card for each animal. Write a story about how the life cycle of an animal compares to your own life cycle and enter the story in your science notebook.

E

L



N

C

B

J

Z

Y

O

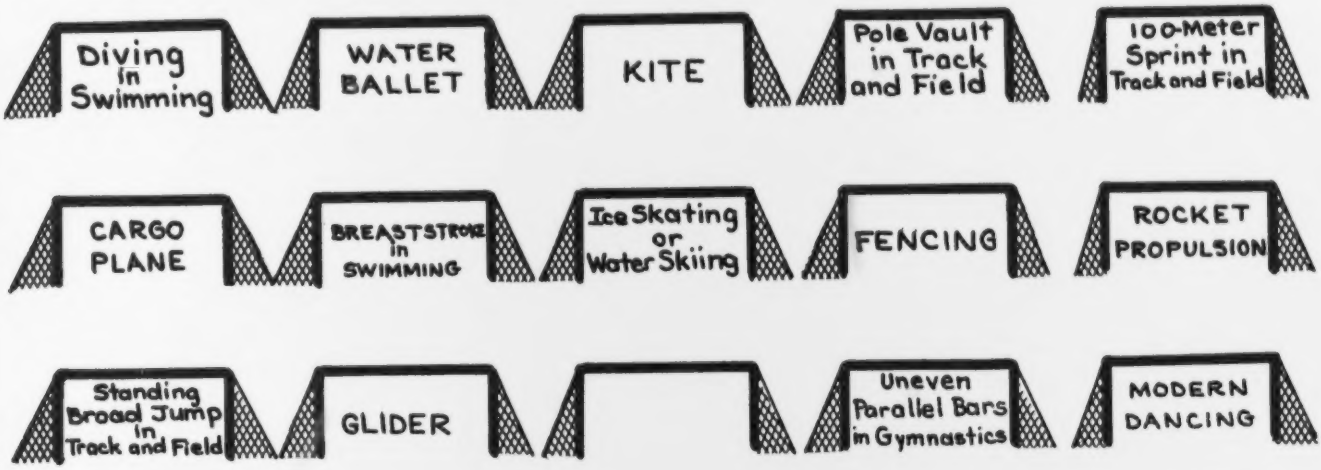
M

D

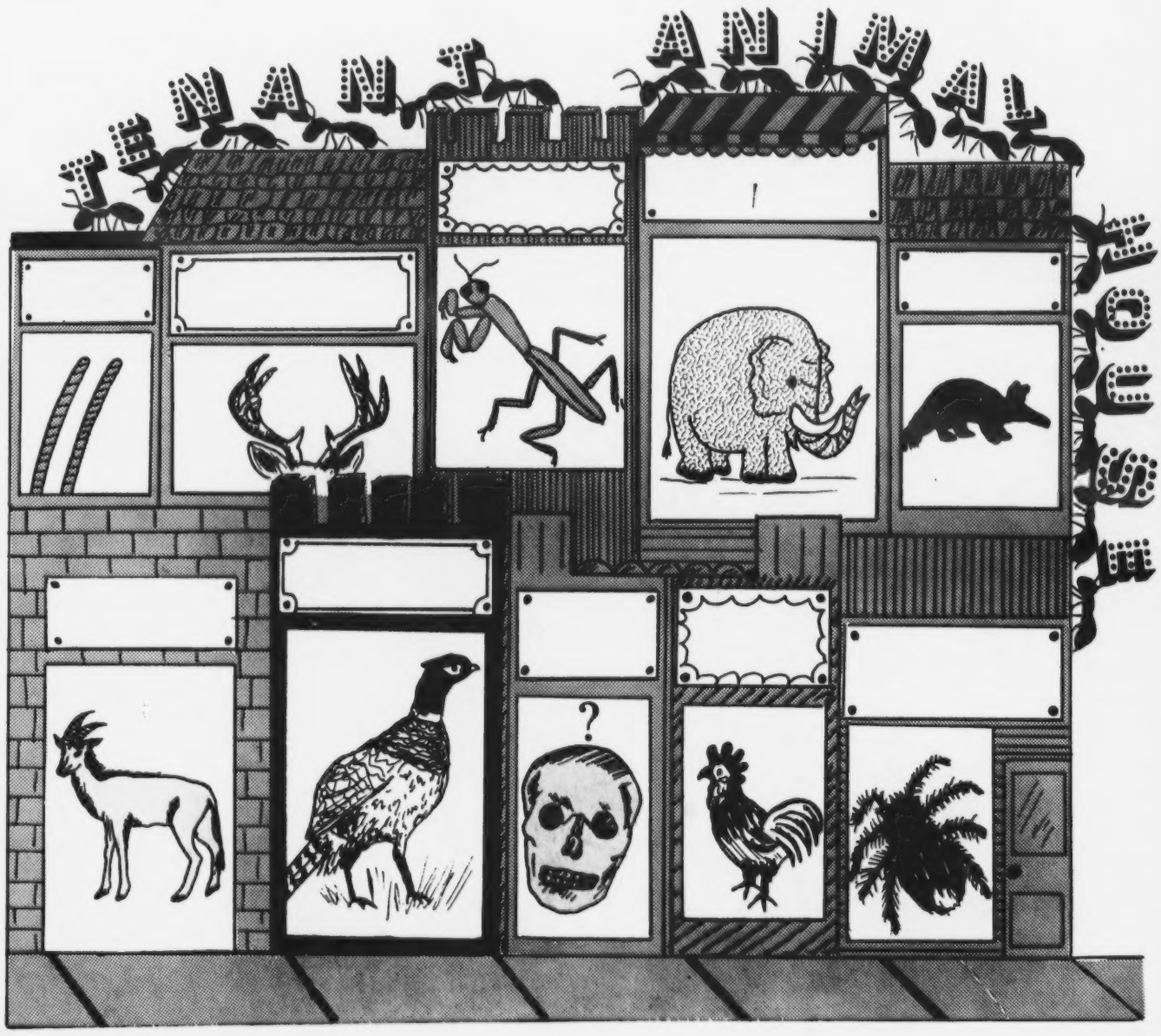
T

ANIMAL OLYMPICS

Trace the path of the animal on the hockey puck shown below to the description in the hockey net that best describes how humans have adapted that animal behavior to their own activities and inventions. Go outside and observe animals. Draw your favorite animal on the "My Choice" puck. Write a description in the open hockey net of one activity or invention that humans could develop by observing that animal. Make a list of other activities and inventions that man has obtained from the study of animals.



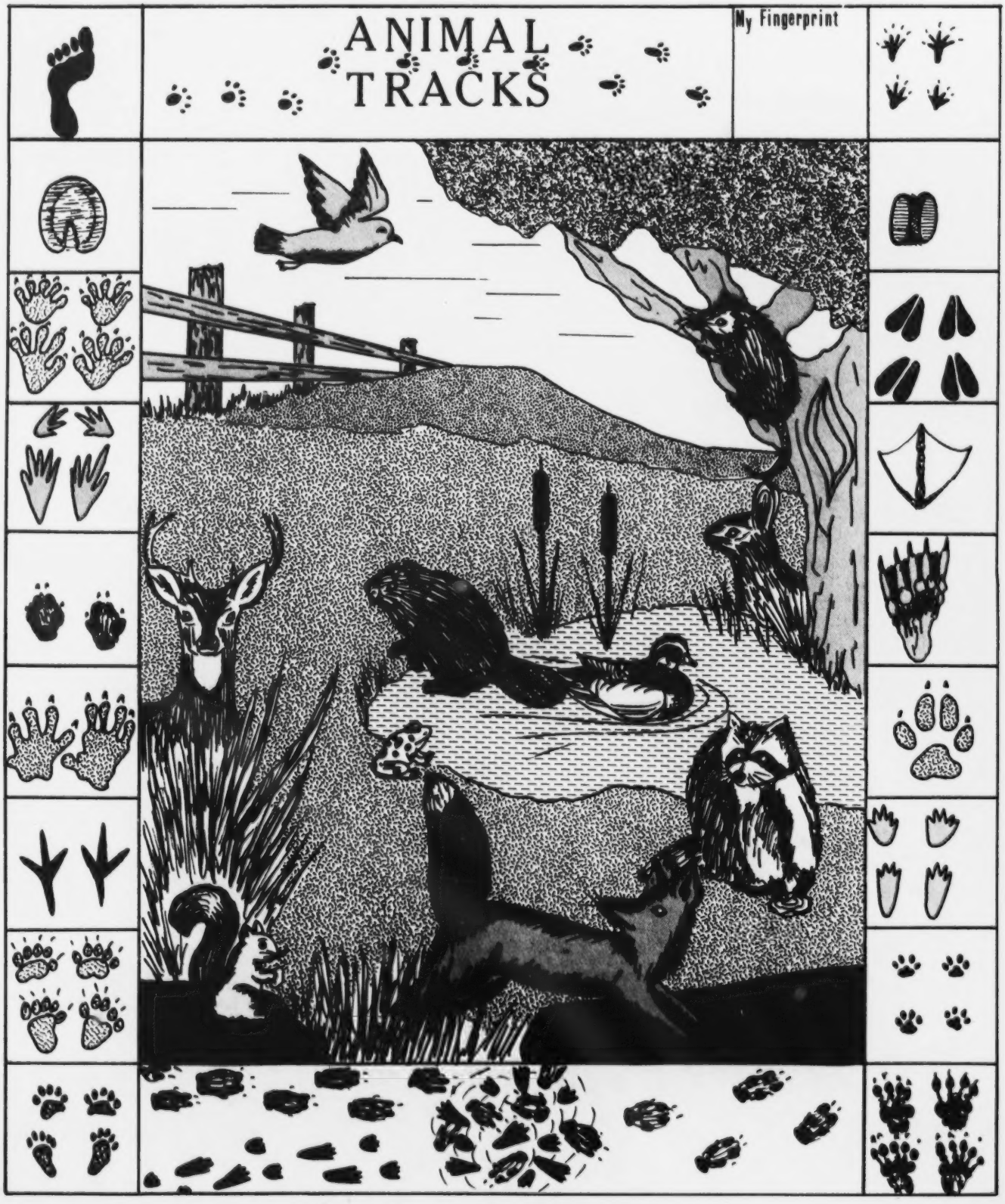
There are ten different TEN "Ants" found in the word list clues below. Let these ants help you make words that will identify an animal word. Fill in each letter to make the word. Write the word above the appropriate window that matches the animal tenant in that window.



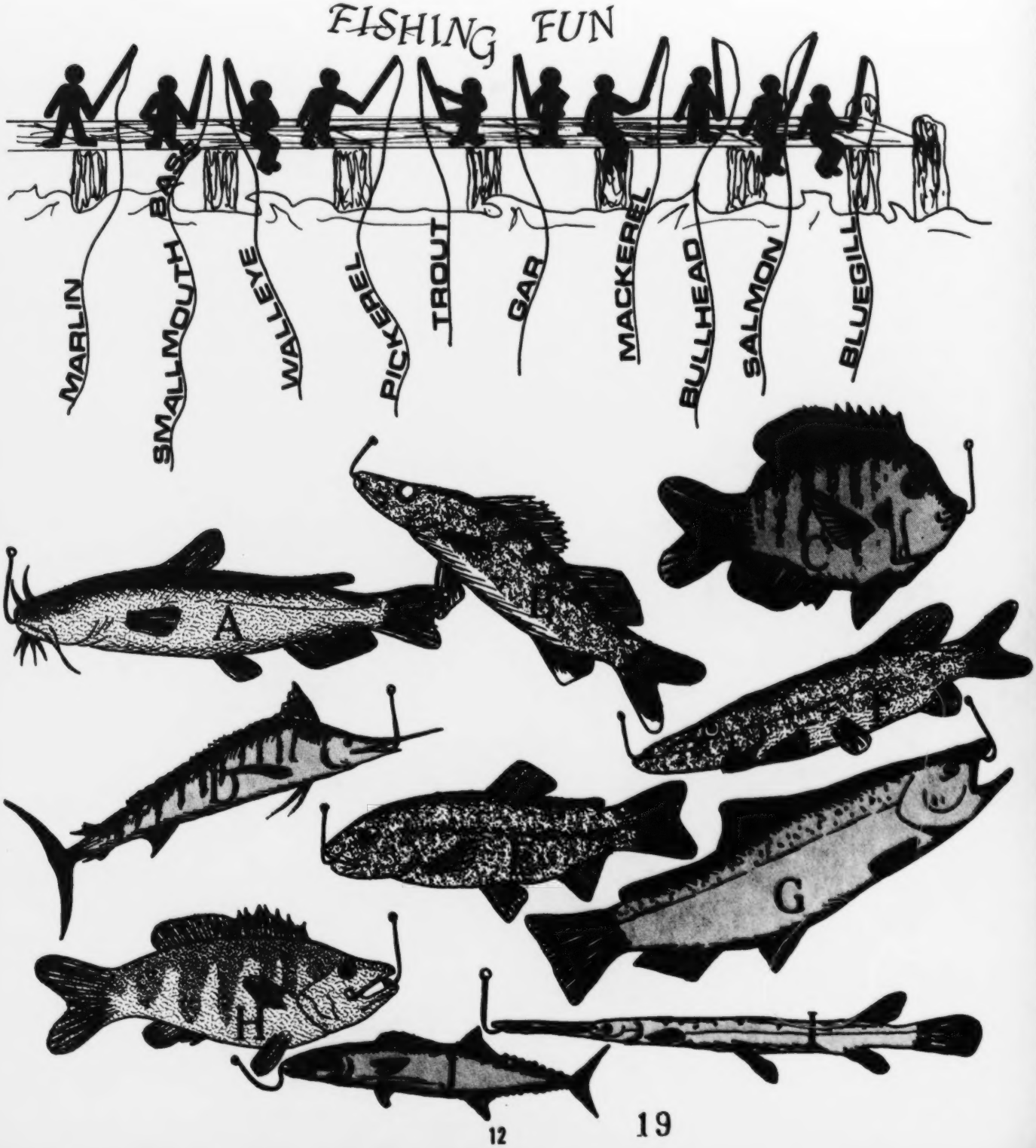
Word List Clues:

1. I am the largest land animal.
2. I am insect feelers.
3. I am animal horns.
4. I am a praying insect.
5. I wear a ring around my neck.
6. My home is on the range.
7. I am a fighting fowl.
8. I am a hairy spider.
9. I study man.
10. I'd love to eat all the tenants.

Identify the animal that made each track surrounding the animal environment. Draw a line from the animal's track to the animal that made that track. Write a story about what happened to each animal when they all met in the scene below. Place your track (fingerprint) in the appropriate box. Compare your track to those made by the animals and your friends. Keep a record of each type of track and enter it in your science notebook.



Below are ten people fishing from a pier. Attached to their lines are the names of fish found in the water below. Draw a line from the fishline to the corresponding hook in the fish. Then, glue a length of fishline from the pole to the hook on the fish that best matches the description of that fish. Color in significant markings that would help you and others remember the names of all the fish.



MY BIRD CHECKLIST AND CALENDAR

Observe at least one bird a day and record the name of the bird on this handy bird checklist and calendar. Place an "X" in the box next to the name of the bird below. On the calendar write the name of the bird and the date seen. On the chart on the next page (page 14), record the name of the bird, date seen, its shape and size, field marks, location seen, bird's behavior and its song. Include information on the bird's body, wing and tail shape, body size and shape, tail length, crest, legs, bill and color. Then, make a bird book that includes a sketch of each bird seen.

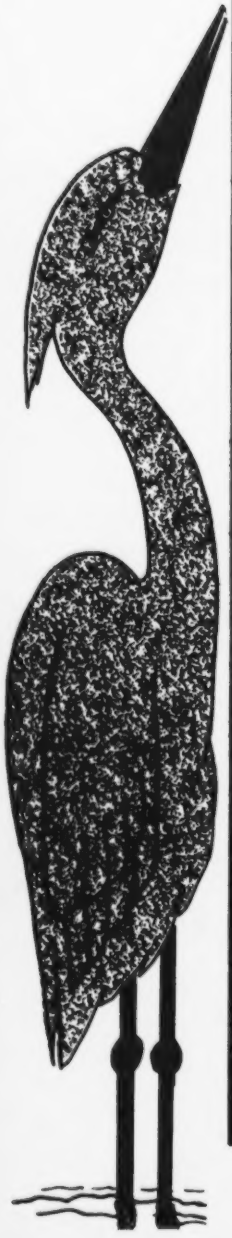
MONTH: _____

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY

- ☐ Blackbird
- ☐ Bluebird
- ☐ Bluejay
- ☐ Bobolink
- ☐ Cardinal
- ☐ Chickadee
- ☐ Crow
- ☐ Duck
- ☐ Flicker
- ☐ Goldfinch
- ☐ Goose
- ☐ Hawk
- ☐ Hummingbird
- ☐ Oriole
- ☐ Owl
- ☐ Pheasant
- ☐ Robin
- ☐ Sandpiper
- ☐ Sparrow
- ☐ Swallow
- ☐ Thrush
- ☐ Warbler
- ☐ Other
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Bird Chart

My name is...			
I was seen on this day...			
I was located...			
I am 1)larger than a crow 2)between a crow and a robin 3)smaller than a robin			
My shape is...			
My color is...			
The markings on my body are...			
My tail is short or long.			
My tail is shaped like this...			
My wings are shaped like...			
My legs are...			
My bill is...			
My feet are...			
I acted like...			
I sounded like...			



A naturalist observes birds with binoculars. Read the description of each bird found on the lens of the binoculars below. Identify the bird and write its name on the longest line of the lens. Then, use the groupings below and place the correct numeral of the group to which that bird belongs on the shortest blank in the lens.

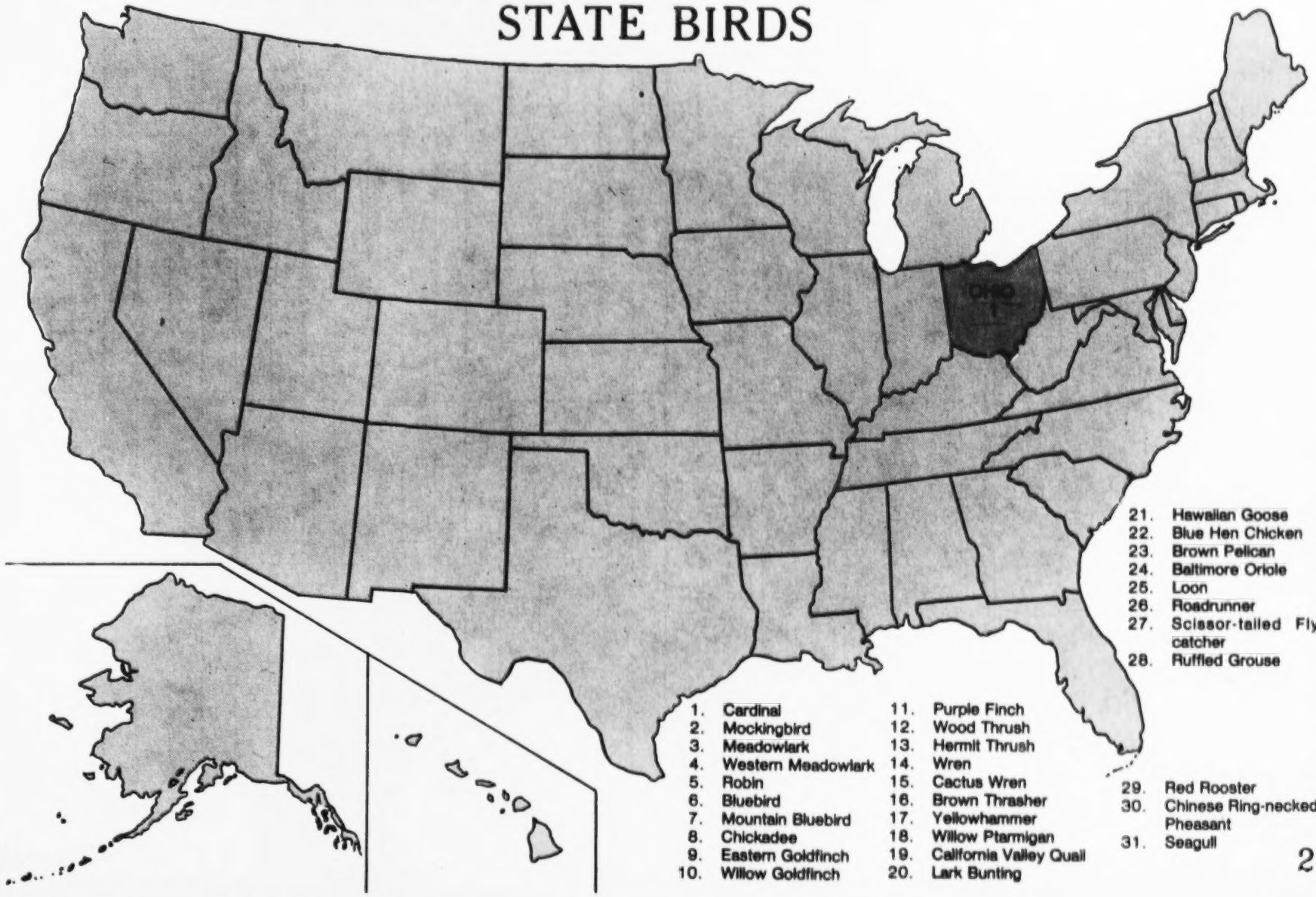
BIRD SPY!

I have a hooked beak, strong feet, and feed on small animals.
b.
I live near a seashore and feed on small water animals.
d.
I have a red head, attack my prey, and like to pick insects.
a.
I have long wings and a long tail. I live near bodies of water.
c.
I live near water or in a marsh. I either tip up or dive for my food.
f.
I have white sides on my tail and on the round mostly in fields.
g.
I am found in woodlands and have a fine bill that helps me get insects.
e.
I am seen on the ground or in low shrubs and on the size of a robin.
h.
I am found in the woodlands and have a blue color with a large body.
k.
I am blue in color, known for my beautiful song and feed on the ground.
i.
I have a long neck, long legs and a pointed bill. I watch for small fish.
j.
I resemble a chicken and am found in brushy areas.
l.
I have long, slender pointed wings and am a great flyer. I catch insects.
m.
You see me perched on bare twigs or power lines. I jerk my tail.
n.

(1) Wading Birds (2) Waterfowl (3) Birds of Prey (4) Grouse and Quail (5) Shore Birds (6) Gulls (7) Woodpeckers (8) Flycatchers (9) Swallows (10) Jays (11) Thrashers (12) Thrushes (13) Warblers (14) Meadowlarks, Blackbirds, Orioles and (15) Finches and Sparrows

Fill in the names of the states on the map below. Find out what bird has been chosen to represent each state. Choose the correct numeral from the key and place this numeral on that state. Ohio has the cardinal as its state bird so the numeral 1 is printed on the state of Ohio. Can you find the most popular bird chosen by states in the United States? What bird is your state bird? Investigate how your state chose its state bird.

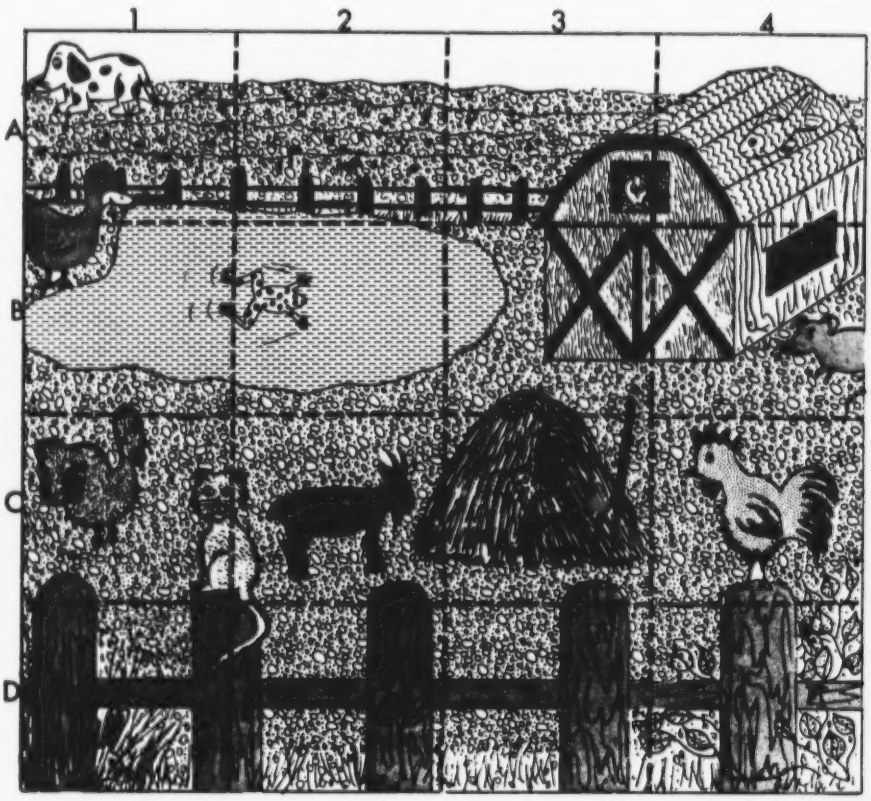
STATE BIRDS



1. Cardinal
2. Mockingbird
3. Meadowlark
4. Western Meadowlark
5. Robin
6. Bluebird
7. Mountain Bluebird
8. Chickadee
9. Eastern Goldfinch
10. Willow Goldfinch
11. Purple Finch
12. Wood Thrush
13. Hermit Thrush
14. Wren
15. Cactus Wren
16. Brown Thrasher
17. Yellowhammer
18. Willow Ptarmigan
19. California Valley Quail
20. Lark Bunting
21. Hawaiian Goose
22. Blue Hen Chicken
23. Brown Pelican
24. Baltimore Oriole
25. Loon
26. Roadrunner
27. Scissor-tailed Flycatcher
28. Ruffled Grouse
29. Red Rooster
30. Chinese Ring-necked Pheasant
31. Seagull

ANIMAL CLUES

Use the clue found in the chart below to identify the animal and the grid space in which that animal is found. Be sure to look carefully because some are hidden. Complete the chart below. Can you identify other animals and corresponding grid spaces in the picture?
Write a clue for each. Fill in the grid space for each of these animals, using the chart below.



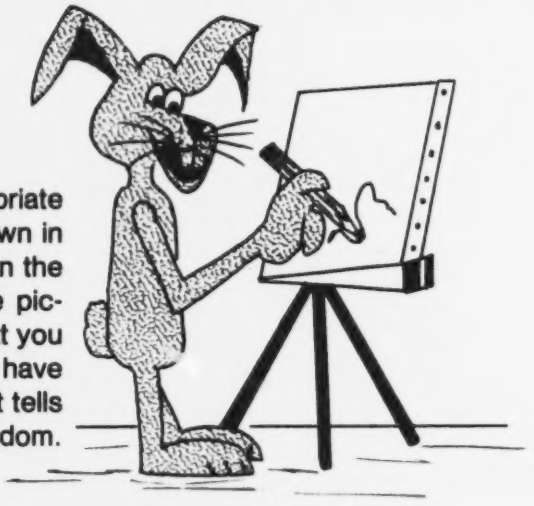
CLUE	ANIMAL	GRID SPACE
PEOPLE THINK THAT I AM WISE.		
CATS PREY ON ME.		
I HAVE SCALES.		
I LAY MY EGGS IN WATER.		
MY WINGS ARE BRIGHTLY COLORED.		
I PLANT OAK TREES.		
I AM A VEGETARIAN AND AM KNOWN FOR MY HARING EXPERIENCES.		
I SHED MY SKIN.		
I CARRY THINGS LARGER THAN MYSELF.		
I AM A SMALL LADYLIKE ANIMAL AND LOVE TO EAT SILVER MAPLE SCALE.		
STUDENT-DEVELOPED CLUES: (Answers Will Vary.)		
1.	DOG	
2.	DUCK	
3.	ROOSTER	
4.	KITTEN	
5.	GOAT	
6.	TURKEY	

FISH									
REPTILES									
AMPHIBIANS									
BIRDS									
MAMMALS									

DIRECTIONS:

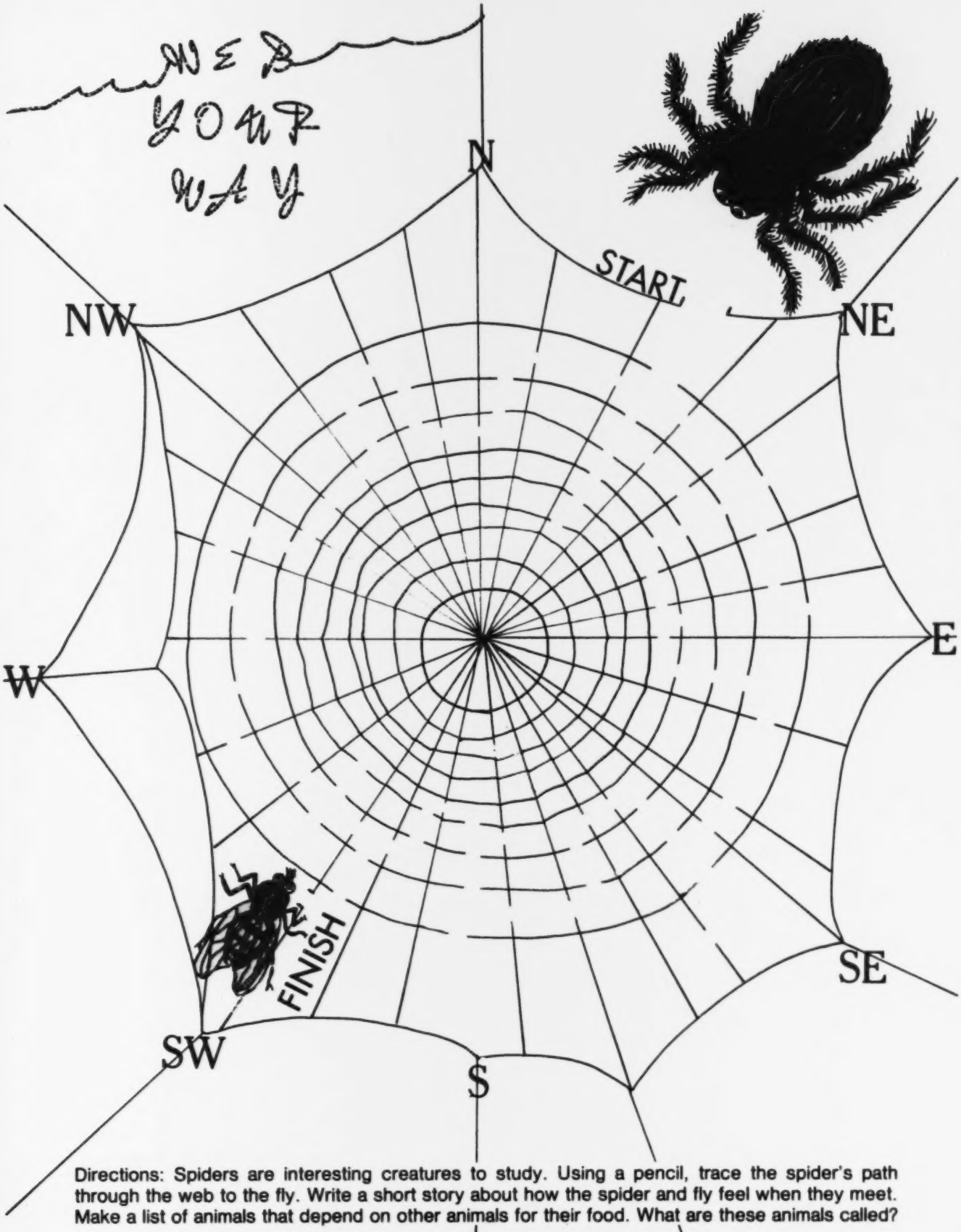
Animals with backbones are called vertebrates. For each letter in the word BACKBONES, list one animal whose name begins with that letter. For example, if the first letter is "B," the name of a fish whose name begins with B is a "bluegill." The term bluegill is written in the row opposite "fish" in the B column. Some are hard, some easy. Can you identify animals that are not vertebrates? What are these called? Make a list of these animals below.

ANIMAL DRAW



Draw the picture found in the squares below on the appropriate grid square. The square A1 at the bottom should be drawn in the grid space A1 at the top. As you draw the pictures on the grid, the animal will become slightly larger because the pictures at the bottom of the page are smaller than those that you actually draw on the grid. Identify the animal after you have drawn all the squares on the grid. Then, write a story that tells why this animal is such a special animal in the Animal Kingdom.

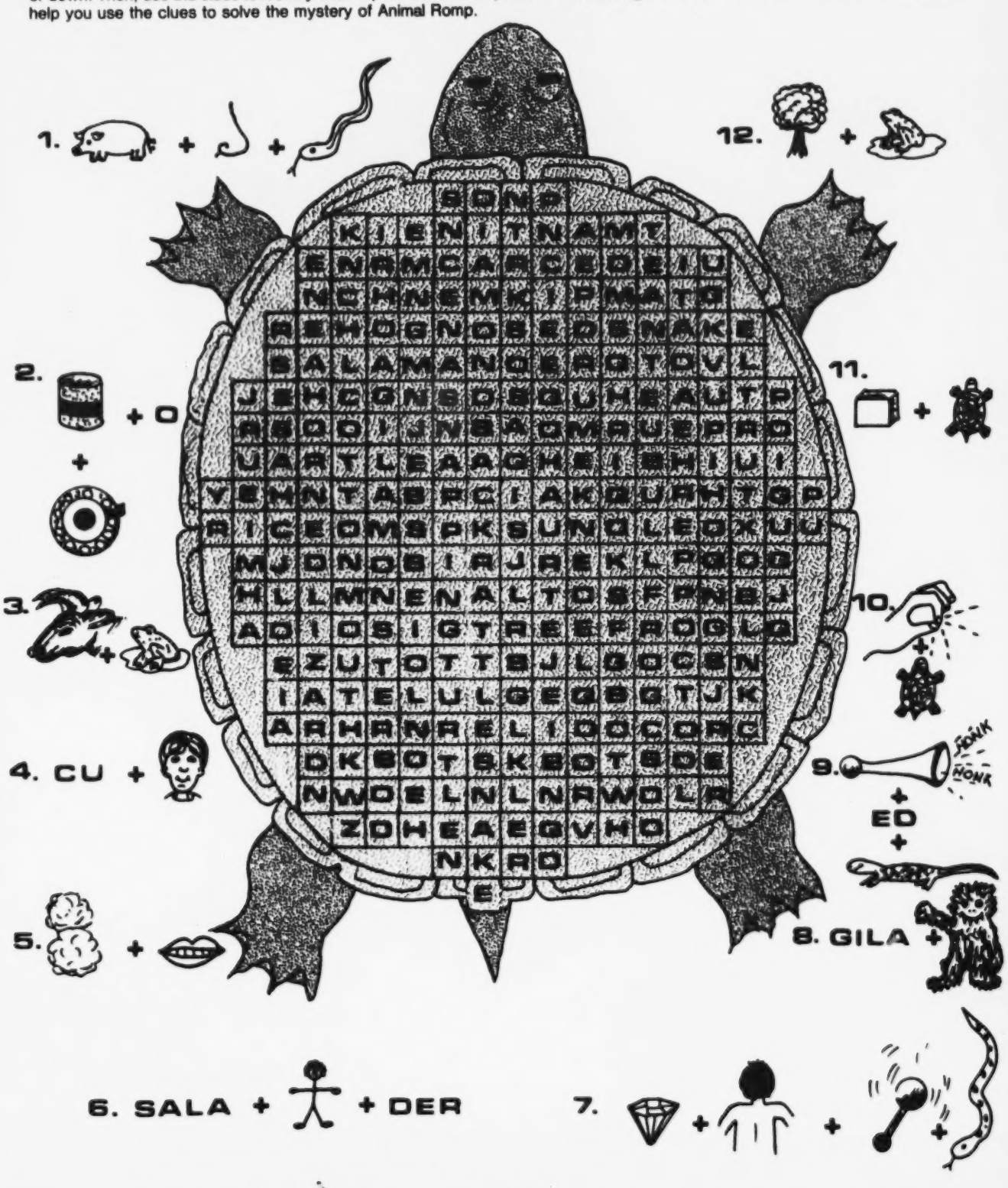
	1	2	3	4
A				
B				
C				
D				



Directions: Spiders are interesting creatures to study. Using a pencil, trace the spider's path through the web to the fly. Write a short story about how the spider and fly feel when they meet. Make a list of animals that depend on other animals for their food. What are these animals called?

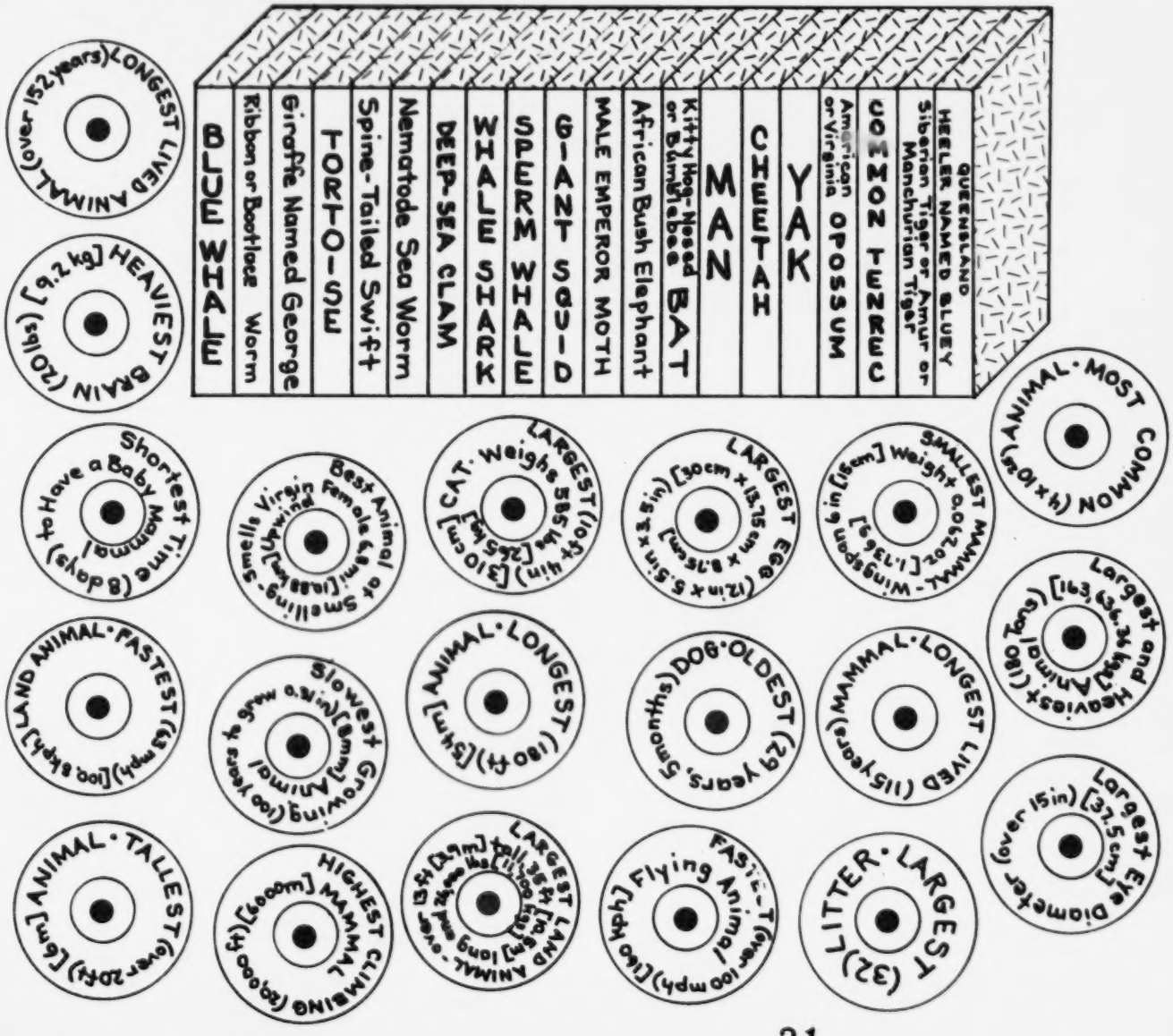
ANIMAL ROMP

Circle the words of famous reptiles and amphibians found on the turtle's back below. The words can be read forward, backward, up or down. Then, use the clues to identify each reptile found in the pictures surrounding the turtle. The circled words on the turtle will help you use the clues to solve the mystery of Animal Romp.



THE TOP 20 ANIMAL RECORDS

Animals of all kinds have set records for their unusual feats. Color each record holder the same color as the record that matches the description of the feat found on the record below. Write a book that features both human and animal records and compare each. How are they different? How are they the same?

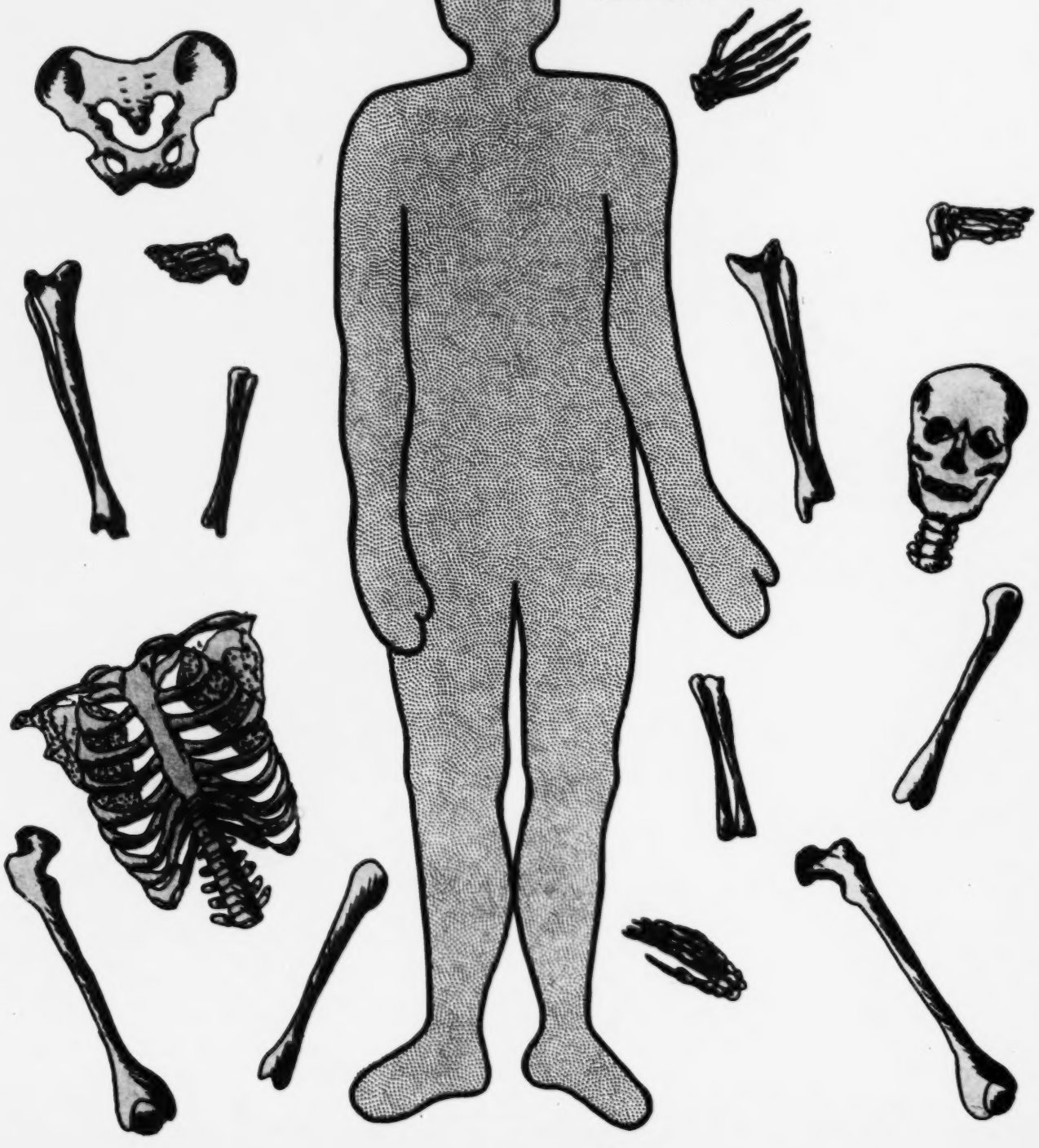

BLUE WHALE
Ribbon or Bootlace Worm
Giraffe Named George
TORTOISE
Spine-Tailed Swift
Nematode Sea Worm
DEEP-SEA CLAM
WHALE SHARK
SPERM WHALE
GIANT SQUID
MALE EMPEROR MOTH
African Bush Elephant
Kitty Hog-Nosed or Bumblebee BAT
MAN
CHEETAH
YAK
American or Virginia OPOSSUM
COMMON TENREC
Siberian Tiger or Amur or Manchurian Tiger
QUEENSLAND HEELER NAMED BLUEY
LONGEST LIVED ANIMAL (over 152 years)
HEAVIEST BRAIN (20lbs) [9.2 kg]
Shortest Time to Have a Baby Mammal (8 days)
Best Animal Female to Smelling Smell a Virgin (188 mi) [302 km]
LARGEST CAT. Weighs 585lbs (10ft) [310 cm] [265 kg]
LARGEST Egg (12in x 8.75in x 5.5in) [30cm x 8.75cm x 13.75cm]
SMALLEST MAMMAL - Wingspan 6 in (15cm] Weight 0.07oz [1.73g]
COMMON (4 x 10in)
Largest and Heaviest Animal (180 ft) [163,636.36kg] (Blue Whale)
Largest Diameter (over 15in) [37.5cm] Eye
LITTER. LARGEST (32)
Fastest Flying Animal (over 100 mph) [160 kph]
LARGEST LAND ANIMAL - over 13ft [4m] tall, 35ft [11m] long and 13ft [4m] wide
HIGHEST CLIMBING MAMMAL (8000ft) [2000m]
Slowest Growing (100 years to grow 4 in) [8mm] Animal
LONGEST ANIMAL (180 ft) [54m]
DOG. OLDEST (29 years, 5 months)
MAMMAL. LONGEST LIVED (115years)
FASTEST LAND ANIMAL (163 mph) [262 kph]
ANIMAL. TALLEST (over 20ft) [6m]

31

GET YOURSELF TOGETHER

Cut out the pictures of bones below and glue them to the appropriate locations on the figure. Identify each bone and you will have yourself all together.

Complete the project. Print your name on the completed figure and the attached support beam. Then, write a story about your history as a person and what makes you so special. Hang as a mobile for all to see.



TEACHER/PARENT GUIDE

MY ANIMAL BUMPER STICKER

Activity Page Number II

Concept: student expression of own personal values on contemporary issues related to animals and life

Materials: one activity sheet per student, pencils, pens, and crayons

Description: Have students design their own bumper stickers that best portray their personal feelings on a contemporary issue related to animals. Hold a discussion with youngsters on how they feel about such issues.

Answers: Answers will vary. Here are some sample sayings found on bumper stickers and a major concept that could be discussed with each.

Animal Bumper Sticker Sayings
Extinct Is Forever
Tired of TV? Watch an Aquarium
Roaming Pets Cause Regrets

Concepts That Could Be Discussed
Endangered Species
Effects of Television on Behavior
Dognapping and Use of Animals for Experimentation Purposes

MY ANIMAL BOOK (front cover)

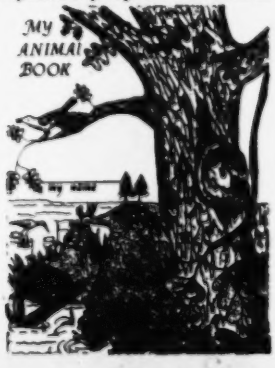
Activity Page Number 1

Concept: animals need plants for food, shelter, and safety

Materials: scissors, glue, stiff cardboard (8½" x 11" from back of writing tablets) or tagboard, one activity sheet per student

Description: Have youngsters cut activity sheet into designated sixteen squares. Rearrange puzzle pieces to make complete picture. Glue pieces in place onto cardboard or tagboard. Use as front cover for Student's Animal Book. Color cover. Decorate. Add name of youngster to cover. Discuss food as a necessity for animal life and how animals use plants for shelter and safety. Then, run off back cover of Student Booklet that features animals eating other animals (activity page 24). Use tape to bind front cover to back cover. Insert completed activity pages between covers. Makes permanent Student Booklet for youngsters' study of animals.

Answer: Completed project looks like this:



ANIMAL KINGDOM

Activity Page Numbers 2, 3

Concept: classification of animals in the Animal Kingdom

Materials: scissors, glue, pencils or pens. One copy of activity pages 2 and 3 per student.

Description: This activity helps students understand how animals are grouped into groups and subgroups in the Animal Kingdom. Give each child one copy of activity pages 2 and 3. Cut out the six smaller cards on activity page 2. Youngsters glue these cards to matching cards on activity page 3. Stress the fact that there are five classes of vertebrates (with backbones): Mammalia, Aves, Reptilia, Pisces, and Amphibia. Class Insecta is found in the phylum Arthropoda and contains insects that have a well-defined head, thorax and abdomen, only three pairs of legs and typically one or two pairs of wings. Children can then find out how many species belong to each class of animals and note the number in each class.

Answers:

Animal(s)	Class
mouse	Mammalia
bird	Aves
turtle iquana	Reptilia
fish	Pisces
frog	Amphibia
dragonfly	Insecta

MICROSCOPIC CREATURES

Activity Page Number 4

Concept: identification of microscopic animals by specific characteristics and patterns of behavior

Materials: one activity page per student, pencils, small animal reference materials such as *Pond Life* by Herbert S. Zim, specimens, and microscopes if available

Description: This activity helps youngsters conduct research on very small creatures. Students identify the creatures and learn basic characteristics through observation. Creatures can often be obtained from a shallow, quiet pond. Instruct students on how to use the microscope. Have youngsters identify each organism. Then, sketch each. Students then dramatize each creature and its movements. Have other members of the class identify that creature.

Answers:

1. Amoeba
2. Paramecium
3. Tetrahymena
4. Volvox
5. Algae
6. Euglena
7. Hydra
8. Chilomonas
9. Planaria
10. Vorticella
11. Daphnia
12. Rotifer
13. Cyclops
14. Brine Shrimp
15. Stentor

ANIMAL SPIN AND MATCH

Activity Page Number 5

Concept: adult animal and corresponding name of offspring

Materials: scissors, stiff cardboard or tagboard, glue, paper fastener, paper punch, one activity sheet per student

Description: Have youngsters cut out circles A and B and the pointer. Glue to single-layered cardboard or tagboard. Laminate. Punch holes in centers of both circles and pointer. Place pointer on top of circle A and circle B. Attach centers with paper fastener. Children spin the pointer. Name the adult animal. Youngsters should then rotate circle B until the name of the offspring on circle B matches the adult animal on circle A. Extend this activity further by identifying the names of other adult animals and their offspring. Make spinners and wheels for these animals from pizza wheels of various sizes.

Answers:

Adult	Offspring
Deer	Fawn
Bear	Cub
Goose	Gosling
Tiger	Whelp
Seal	Pup
Frog	Tadpole
Goat	Kid
Kangaroo	Joey

SHADY TRAVELS

Activity Page Number 6

Concept: Animals react to various stimuli in their environment.

Materials: mealworm or sow bug, pencil, paper, graph paper, one activity page per student

Description: This activity helps youngsters learn how to do a scientific investigation and record results of that investigation. Give each child a mealworm or sow bug. (Mealworms can be purchased fairly inexpensively at pet shops. Sow bugs can be purchased or found under decayed logs.) Have children examine the creature. Count segments. Find out what the creature eats. Challenge youngsters to investigate what shade the creature prefers. Make a record and graph by recording the trial number and shade chosen. Youngsters can then build a home, including a maze, for their creature. Stress proper care of the creature. Mealworms can be kept in a plastic container with cornmeal or flakes with a tiny piece of apple for moisture. Use in conjunction with activity 8 that features the stages of a mealworm: egg, larva, pupa, and adult. Sow bugs can be kept in a dark, moist environment. Include tiny bits of decayed vegetation such as leaves, grass and lettuce. Sow bugs live for two years and bury themselves in the ground during winter. Best time to acquire them is in spring or fall.

Answer: Animal prefers square 2, the darkest square.

ANIMAL TOGETHERNESS

Activity Page Number 7

Concept: interdependency of animals

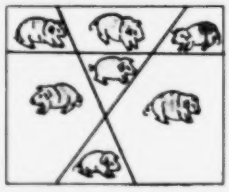
Materials: one activity page per student, pencil, reference materials

Description: This activity teaches youngsters the names of specific groups of animals and the interdependency of each. Introduce activity with a discussion on the types of ants and the roles they play in an ant colony. Discuss the same for bees. Stress the role that each kind plays and how one type is dependent upon another. Compare to human society and different types of occupations that humans engage in to develop a workable society. Have children complete the exercise. Some may want to develop their own lists of words for names of groups of living creatures. Use these words often. Have youngsters write stories about how animals are dependent upon each other. Challenge youngsters to do the pigpen exercise. Stress the importance of animals and humans having a time to be alone by themselves.

Answers: (A) Fill in words.

Ants	-	Colony	Geese	-	Gaggle, Flock
Bees	-	Swarm, Hive	Cattle	-	Drove
Gnats	-	Horde	Mules	-	Span
Gorillas	-	Band	Oxen	-	Yoke
Vipers	-	Nest	Horses	-	Pair
Quail	-	Bevy	Pigs	-	Litter
Fish	-	School	Chicks	-	Brood
Clams	-	Bed	Kittens	-	Kindle
Cranes	-	Sedge	Hounds	-	Pack

(B) Pigpen Puzzle Answer



ANIMAL METAMORPHOSIS

Activity Page Number 8

Concept: sequential stages of animal growth

Materials: scissors, glue, cardboard, one activity page per student

Description: This activity gives youngsters an opportunity to learn the various stages in the growth of animals. It also helps youngsters learn the correct order or sequence of these growth stages. Have children cut out the twelve cards and glue to pieces of single-layered cardboard. Youngsters then write the correct name of each stage on each card. If possible, laminate. Children then place cards in proper sequence to show correct stages of growth for mealworm, frog, and butterfly. Sequence stories for each stage are then written. Children put stories together in proper sequence for each animal and then dramatize these stages.

Answers: mealworm - egg (J), larva (E), pupa (D), adult beetle (B), frog egg (C), tadpole (M), tadpole with hind legs developed (Z), adult frog (L), butterfly egg (T), larva (N), crysalis (O), adult butterfly (Y)

ANIMAL OLYMPICS

Activity Page Number: 9

Concept: adaption of animal behavior to human activity and invention, ethology

Materials: one activity page per student, pencils, reference materials

Description: This activity helps youngsters understand the value of observing animals and how animal behavior has led man to develop new inventions, discoveries and recreational activities. Discuss how man has used monkeys as test pilots in space travel. Give students activity sheet and reference materials. Have youngsters draw a line from the hockey puck to the description in the hockey net that best matches that adaptation. Encourage each youngster to develop his own discovery and write his best one on the "My Choice" puck. Include description of original idea for that adaptation in the open hockey net.

Answers:

Animal - Adaptation
Gazelle - Fencing
Sperm Whale - Diving in Swimming
Wild Gibbon - Uneven Parallel Bars in Gymnastics
Cheetah - 100-Meter Sprint in Track and Field
Fish - Breaststroke in Swimming
Frog - Standing Broad Jump in Track and Field
Harp Seal - Water Ballet
Salmon - Pole Vault in Track and Field
Flying Fish - Glider
Flea - Rocket Propulsion
Borneo Squirrel - Kite
Water Strider - Ice Skating or Water Skiing
Albatross - Cargo Plane
Penguin - Modern Dancing
My Choice - Answers will vary.

TENANT ANIMAL HOUSE

Activity Page Number: 10

Concept: scientific facts and word recognition that involves scientific phenomena

Materials: one activity page per student, pencils, reference materials

Description: In this activity, youngsters grasp scientific knowledge through word recognition from parts to wholes. Do several examples on the board of how small words can be found in larger words. Give students activity page. Have youngsters use the clues at the bottom to identify the appropriate animal. Then, students place the name of the animal above the window in the house. Youngsters can develop their own dictionaries of scientific clues with appropriate words for each.

Answers:

1. ElephANT
2. ANTennae
3. ANTlers
4. mANTis
5. PheasANT
6. ANTelope
7. bANTam
8. TarANTula
9. ANThropologist
10. ANTeater

ANIMAL TRACKS

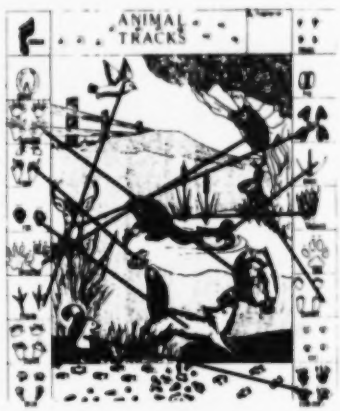
Activity Page Number: 11

Concept: identification of animals by their tracks

Materials: one activity page per student, reference materials, ink pad, pens or pencils

Description: Introduce activity with a discussion of "Bigfoot" and his tracks or with a discussion of an individual's fingerprints. Stress the importance of tracking in hunting or detective work. Using reference materials, have students identify each track around the picture, then draw a line that connects the track to the animal in the picture. On a separate sheet of paper, have students write their own stories about what happened when the two animals met in the scene depicted at the bottom of the picture. Children then ink their thumbs and stamp their thumbprints in the box at the top of the picture. This activity can be extended further into making casts of tracks using plaster of Paris. In addition, students can study the process of fingerprinting of individuals in detective work.

Answer: Answer sheet should look like this:



FISHING FUN

Activity Page Number: 12

Concept: identification of fish

Materials: scissors, crayons, colored marking pencils or felt tipped pens, pencils, one activity page per student, fishline or thread of ten different lengths for each student, glue and reference materials.

Description: Hold a discussion on the kinds of fish that your youngsters like to eat. Discuss the importance of fish in our diet and why people must be knowledgeable about the type of fish they eat. Give activity sheet to each student. Have students identify each fish. Draw a line from the pole to the corresponding fish. Add prominent markings to fish. Give youngsters envelopes that contain ten various lengths of fishline. Youngsters then match the corresponding length of fishline from the fishing pole to the

appropriate fish. Glue fishline to sheet. Have youngsters write their favorite fiction or nonfiction fish tales, especially about the one that got away.

Answers:

A. Bullhead	F. Pickerel
B. Walleye	G. Salmon
C. Bluegill	H. Smallmouth Bass
D. Marlin	I. Gar
E. Trout	J. Mackerel

MY BIRD CHECKLIST AND CALENDAR

Activity Page Number: 13

Concept: identification of birds

Materials: bird feathers, pencils, glue, one activity page per student, reference materials such as *How to Know the Birds* by Roger Tory Peterson.

Description: Introduce this lesson with a discussion on types of birds such as large and small birds and light and heavy birds. Then, give one activity page and bird feather to each student. Have students fill in the name of the month and date in the appropriate blanks. Glue bird feather to master after students have had an opportunity to examine the feather and identify the bird from which it came. Encourage students to print the name of the bird they saw in the box on the calendar, make an "X" in the proper box below or write in the name of the bird in the "other" column. Extend activity further by completing the chart on activity page 14.

Answers: Will vary depending upon what birds are seen.

BIRD CHART

Activity Page Number: 14

Concept: identification of birds by various characteristics and locations

Materials: one activity page every three days per student, pencil and reference materials that include *A Field Guide to the Birds* by Roger Tory Peterson.

Description: Done in conjunction with activity page 13, this chart can be used throughout the year. Make a number of copies of this chart for each student. Encourage students to gather as much information as possible about each bird that is seen. Extend this activity further by taking photographs of birds, tape-recording their sounds or playing records that feature bird songs. Identify each type of bird by its characteristics and location where seen.

Answers: Will vary depending upon what birds are seen.

BIRD SPY!

Activity Page Number: 15

Concept: identification of birds, habitats and types of birds

Materials: binoculars, one activity page per student, pencils, reference materials such as *A Field Guide to the Birds* by Roger Tory Peterson.

Description: Introduce this exercise with a pair of binoculars. Discuss how binoculars are used in the study of birds. From the description given on the outer rim of each lens on the activity sheet, have youngsters identify each bird. From the fifteen groups of birds below, have the students select the number that best matches the group for each bird. Extend activity further into the types of habitats of birds found during different seasons throughout the year. Make a sketch of what the bird and its habitat look like during each season of the year.

Answers:

Letter on Lens	Name of Bird	Group
A	Redheaded Woodpecker	7
B	Hawk	3
C	Herring Gull	6
D	Sandpiper	5
E	Yellow-rumped Warbler	13
F	Duck	2
G	Meadowlark	14
H	Mockingbird	11
I	Bluebird	12
J	Heron	1
K	Bluejay	10
L	Grouse	4
M	Barn Swallow	9
N	Phoebe	8

STATE BIRDS

Activity Page Number: 16

Concept: identification of state birds and various states in the United States

Materials: one activity page per student, pencils, reference materials such as an atlas of states or an almanac.

Description: This activity not only gives students knowledge about what states have adopted what birds but also presents an opportunity for students to learn the location of various states in the United States. Discuss your state bird. Introduce activity page. Have students identify and label each state. Then, have youngsters research what bird has been adopted by each state. Place the numeral of that bird inside that state. Extend activity further by finding out how a state bird is chosen such as by legislative action or popular vote. Then, have children find out the adopted state insect for each state and add these names to the corresponding states.

Answer: Answer sheet should look like this:

ANIMAL CLUES

Activity Page Number: 17

Concept: animal identification by various characteristics, using a grid to locate various animals

Materials: one activity page per student, pencils, books on animals, map or globe

Description: Introduce lesson with a discussion of lines of longitude and latitude found on a map or globe. Stress how animal experts use the same type of grid system to locate and count different species of animals in a designated area. Give one activity page to each child. Have youngsters identify the animal by using the clue. Write name of animal on chart. Then, have youngsters write the appropriate grid space on the chart where each animal is located. Extend activity to include all animals found in the scene by having students make up a clue and then identify the animal and appropriate grid space for each.

Answers:

Clue	Animal	Grid Space
People Think That I am Wise.	Owl	A3
Cats Prey on Me.	Mouse	B4
I Have Scales.	Fish	A4
I Lay My Eggs in Water.	Frog	B2
My Wings Are Brightly Colored.	Butterfly	D2
I Plant Oak Trees.	Squirrel	C3
I Am a Vegetarian and Am Known for My Haring Experiences.	Rabbit	D1
I Shed My Skin.	Snake	B4
I Carry Things Larger Than Myself.	Ant	A2
I Am a Small Ladylike Animal and Love to Eat Silver Maple Scale.	Ladybug	D4

Others

Student-Developed Clues (Answers will vary.)

1. _____	Dog	A1
2. _____	Duck	A1, B1
3. _____	Rooster	C4
4. _____	Kitten	C1, C2, D1, D2
5. _____	Goat	C2
6. _____	Turkey	C1

BACKBONES

Activity Page Number: 18

Concept: identification of animals that are vertebrates

Materials: one activity page per student, pencils, reference materials

Description: Introduce lesson with a discussion of the differences between vertebrates (with backbones) and invertebrates (without backbones). Have children feel their own backbones. Give each child one activity page and appropriate reference materials. Encourage youngsters to keep a record of animals used and not used in the exercise and decide whether these animals are vertebrates or invertebrates.

Answers: Answers will vary but one set of possible answers may look like this:

	B	A	C	K	B	O	N	E	S
FISH	Bluegills	Angler Fish	Carp	Kingfish	Bass	Oarfish	Nordic Shark	Eel	Salmon
REPTILES	Box Turtle	Alligator	Crocodile	King Snake	Boa Constrictor	Omata Diamondback Turtle	Northern Earless Lizard	European Green Lizard	Snapping Turtle
AMPHIBIANS	Bullfrog	African Frog	Caecilian	Kentucky Cave Salamander	Barking Frog	Oak Toad	Newt	Spadefoot Toad	Salamander
BIRDS	Bluebird	Avocet	Crane	Killdeer	Blackbird	Ostrich	Nighthawk	Eagle	Swallow
MAMMALS	Beaver	Antelope	Cougar	Kangaroo	Bear	Opossum	Newfoundland Dog	Elk	Sheep

ANIMAL DRAW

Activity Page Number: 19

Concept: animal proportion, matching grids, scale drawings

Materials: one activity page per student, pencils, scissors

Description: This activity, correlated with art, gives youngsters an opportunity to draw a figure from a smaller one. Introduce activity by doing an activity with grid lines such as latitude and longitude.

Then, give one activity page to each student. Allow children to sketch the part of the animal in the matching grid square. When completed, have children cut out completed picture. Laminate for lasting durability after children have identified the animal and printed its name on the drawing. This activity could be extended into the making of cartoons and films.

Answer: The final grid picture is that of a tiger and looks like this:

WEB YOUR WAY

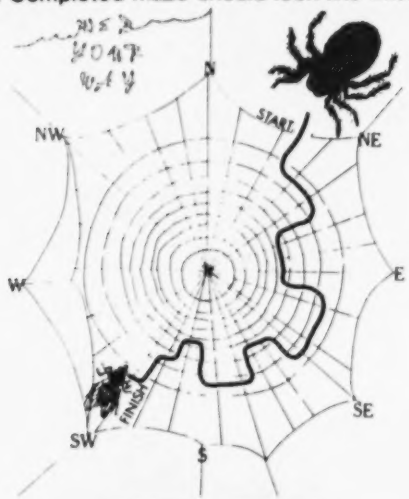
Activity Page Number: 20

Concept: animals are dependent on other animals for food, food chain, predator, prey

Materials: one activity page per student, pencil

Description: This activity features a maze and helps children understand how some animals depend on other animals for food in a food chain. Discuss food chains and give example of each. Tell youngsters that they are to help the spider reach the fly by drawing its path through the maze. Extend this activity to include the direction of travel (north, south, east, west) that the spider takes to reach the fly. Stress the fact that humans also depend on animals for food. Youngsters can then write a story about what happens when the spider meets the fly. Emphasize the senses used by animals to detect other animals including humans and how humans can sense animals and other humans. Sketch other mazes.

Answer: Completed maze should look like this:



ANIMAL ROMP

Activity Page Number: 21

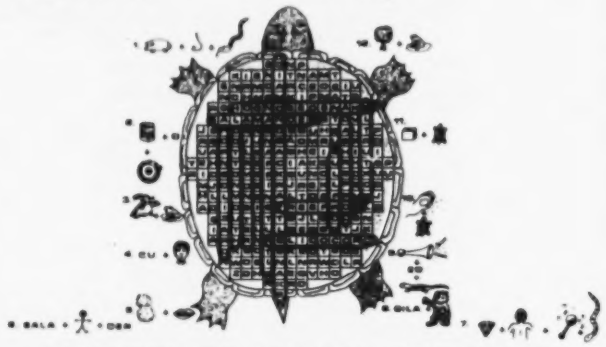
Concept: identification of reptiles and amphibians

Materials: one activity page per student, pencils

Description: Introduce this animal seek-a-word puzzle with a discussion of the characteristics of reptiles and amphibians. Students should know that reptiles are cold-blooded animals with backbones. Give one activity page to each student. Have youngsters circle the words of common reptiles and amphibians found in the puzzle. Then, have students use the clues found in problems 1-12 to identify the names of reptiles and amphibians found in the puzzle. Write stories about their favorite reptiles and amphibians which may include snakes, turtles, lizards, alligators and crocodiles.

Answers: The final puzzle with answers should look like this:

1. Hog-nosed snake
2. Crocodile
3. Bullfrog
4. Copperhead
5. Cottonmouth
6. Salamander
7. Diamondback rattlesnake
8. Gila monster
9. Horned lizard
10. Snapping turtle
11. Box turtle
12. Tree frog



THE TOP 20 ANIMAL RECORDS

Activity Page Number: 22

Concept: animal feats

Materials: one activity page per student, crayons or colored markers, reference materials such as the *Guinness Book of World Records* by Norris McWhirter

Description: Introduce this activity by telling youngsters a startling statistic about an animal, such as "Do you know that an animal lived to be over 152 years old?" Using crayons or colored markers and reference materials, have children color the record holder that matches the record on which the feat is written. Be sure to have youngsters color the record holder and the matching record the same color. Discuss records held by both humans and animals and how animals have sometimes helped humans set records. Then, have youngsters dramatize each of these records. Class can guess what the dramatized record is. Colors should match record and record holder as below.

Answers: Record or Feat

1) Largest and Heaviest (180 Tons) (163636.36 kgs) Animal
2) Longest (180 ft.) (54 m) Animal
3) Tallest (over 20 ft.) (6 m) Animal
4) Longest Lived Animal (over 152 years)
5) Fastest (over 100 mph) (160 kph) Flying Animal
6) Most Common (4×10^{25}) Animal
7) Slowest Growing (100 years to grow .31 inches) (8 mm) Animal
8) Largest Egg (12" x 5.5" x 3.5") (30 cm x 13.75 cm x 8.75 cm)

9) Heaviest Brain (20 lbs.) (9.2 kg)
10) Largest Eye Diameter (over 15") (37.5 cm)
11) Best Animal at Smelling (Smells Virgin Female 6.8 miles) (10.88 km) upwind
12) Largest Land Animal - over 13 ft.(3.9 m) tall, 35 ft. (10.5 m) long and 26,000 lbs.(11700 kg)
13) Smallest Mammal - Wingspan 6 inches (15 cm) weight .062 ozs. (1.736 g)
14) Fastest - 63 mph (100.8 kph) Land Animal
15) Longest Lived (115 years) Mammal
16) Highest Climbing - 20,000 ft.(6000 m) Mammal
17) Shortest Time (8 days) to Have a Baby Mammal
18) Largest (32) Litter
19) Largest - 10'4" (3.1 m) Cat Weighs 585 lbs. (265 kg)
20) Oldest (29 yrs., 5 mos.) Dog

Animal Record Holder

1) Blue Whale
2) Ribbon or Bootlace Worm
3) Giraffe Named George
4) Tortoise
5) Spine-tailed Swift
6) Nematode Sea Worm
7) Deep-sea Clam
8) Whale Shark
9) Sperm Whale
10) Giant Squid
11) Male Emperor Moth
12) African Bush Elephant
13) Kitty Hog-nosed or Bumblebee Bat
14) Cheetah
15) Man
16) Yak
17) American or Virginia Opossum
18) Common Tenrec
19) Siberian Tiger or Amur or Manchurian Tiger
20) Queensland Heeler Named Bluey

GET YOURSELF TOGETHER

Activity Page Number: 23

Concept: skeletal system in the human body

Materials: scissors, glue, pencils, string, punch, x-rays, one activity page per student, reference materials such as *Gray's Anatomy* and other related human anatomy books

Description: This activity helps youngsters learn the skeletal system in their bodies. Introduce activity with an x-ray of a broken bone displayed on a clear window in the classroom. Have children feel as many bones as they can in their bodies. Discuss the function of these bones. Give activity page to students and have them cut out the pictures of the bones. Glue these to proper places on outline. Identify the bones and write the name of each on the activity page. Children may also measure the distance around the part of their bodies where that bone(s) is found and write the measurements on the bone(s). On the reverse side of the figure have children write a story about how they feel about themselves and the things they are most proud of in their lives. Cut out completed figure and support beam. Glue string to figure and connect figure to beam. Hang as a mobile for all to see and share.

Answers: Completed project looks like this:

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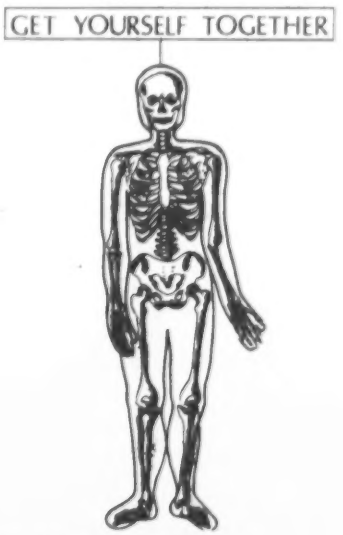

MY ANIMAL BOOK (back cover)

Activity Page Number: 24

Concept: Predator - prey relationships, food chain

Materials: scissors, glue, stiff cardboard (8½" x 11" cardboard from back of writing tablets) or tagboard, one activity page per student

Description: Have youngsters cut activity page into designated sixteen squares. Rearrange puzzle pieces to make complete picture. Glue pieces in place onto cardboard or tagboard. Use as back cover for Student Animal Book. Color animals on cover. Decorate. Add name of student to front cover. Discuss food chain and how animals feed on other animals. Tape this back cover to front cover (activity page 1) and use as cover for the Student Animal Book.

Answer: Completed project looks like this:

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